



KRAMER ELECTRONICS LTD.

USER MANUAL

MODELS:

SPK-C411

Closed-back Ceiling Speakers

SPK-C412

Closed-back Ceiling Speakers

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1 Introduction

Welcome to Kramer Electronics! Since 1981, Kramer Electronics has been providing a world of unique, creative, and affordable solutions to the vast range of problems that confront video, audio, presentation, and broadcasting professionals on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better!

Our 1,000-plus different models now appear in 11 groups that are clearly defined by function: GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Routers; GROUP 3: Control Systems; GROUP 4: Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan Converters and Scalers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity; GROUP 10: Accessories and Rack Adapters and GROUP 11: Sierra Products.

Congratulations on purchasing your Kramer **SPK-C411** and **SPK-C412** Closed-back Ceiling Speakers, which are ideal for the following typical applications:

- Boardrooms
- Conference rooms
- Educational classrooms
- Presentation venues
- Training rooms
- Hotel lobbies

The package includes the following items:

- A pair of **SPK-C411** and/or **SPK-C412** speakers
- Mounting kit
- This user manual



SPK-C411 and **SPK-C412** are designed for indoor dry locations and are suitable for use in air handling spaces (plenum spaces).

2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual
- Use Kramer high-performance high-resolution cables



Go to <http://www.kramerelectronics.com> to check for up-to-date user manuals, application programs, and to check if firmware upgrades are available (where appropriate).

2.1 Achieving the Best Performance

To achieve the best performance:

- Use only good quality connection cables (such as the Kramer **BC-2S**) to avoid interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables)
- Do not secure the cables in tight bundles or roll the slack into tight coils
- Avoid interference from neighboring electrical appliances that may adversely influence signal quality
- Position your Kramer **SPK-C411** / **SPK-C412** away from moisture, excessive sunlight and dust



To ensure that you obtain the best sound results, do not open the housing of the passive speaker or the active speaker.



UL2043 – Fire Test for Heat and Visible Smoke Release for Discrete Products and their Accessories Installed in Air-Handling Spaces.

3 Overview

The **SPK-C411 / SPK-C412** Closed-back Ceiling speakers consist of a pair of high performance closed back speakers. The pair can be mounted on the ceiling, as well as via a ceiling mounting kit used to safely secure the speakers to the ceiling. The speakers are defined in the following table:

Name	Diameter ["]	Impedance [Ω]	Closed-back Depth ["]
SPK-C411	4	4	4
SPK-C412	4	8	4

[Figure 1](#) shows an example of how the **SPK-C411 / SPK-C412** Closed-back Ceiling speakers can be installed in a boardroom setup:

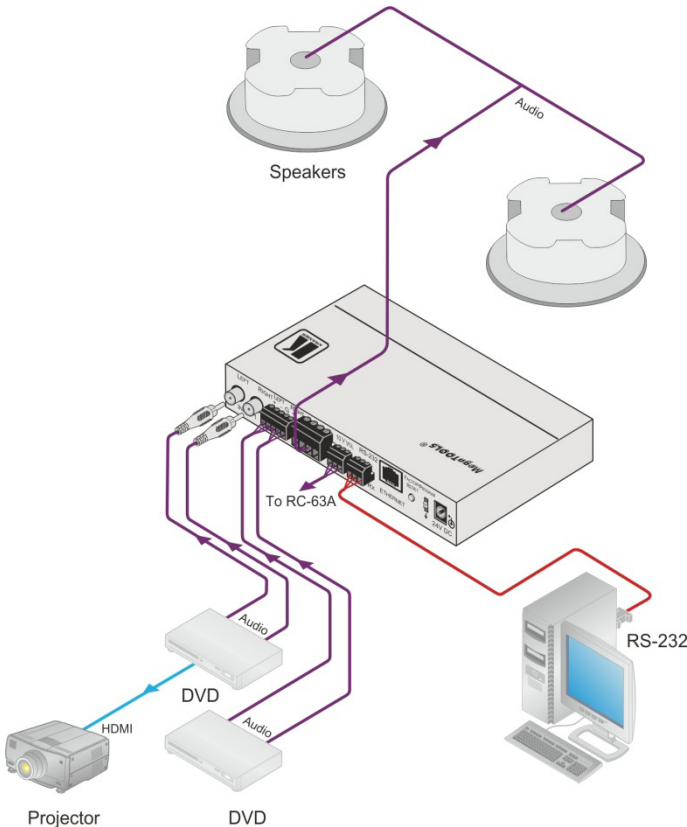


Figure 1: SPK-C411 / SPK-C412 Closed-back Ceiling Speakers in a Boardroom Setup

4 Your Closed-back Ceiling Speakers

Figure 2 defines the **SPK-C411 / SPK-C412**.



Figure 2: SPK-C411/ SPK-C412 Closed-back Ceiling Speaker


The following table defines the Closed-back Ceiling speaker hardware items (per speaker pair) for each model in the series:

Description					
A pair of ceiling speakers (one shown)		Two grilles (one shown)		Cutout template	

This table defines the ceiling mounting kit items:

Four support ring screws		Two ceiling support rings (C-ring) – one shown		Two pairs of tile rails – one of a pair shown	
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Each Closed-back Ceiling speaker is supported by a C-ring and two tile rails. The tile rails prevent the speakers from falling if the tile itself comes out or falls apart, as their ends catch onto the T-grid. When mounting onto the ceiling tiles, use both supports. When mounting onto a sheetrock ceiling, the C-ring alone is used to reinforce the ceiling material.

 Be sure that the tiles can support the speaker. Smaller sized tiles or fiberglass-type tiles cannot support the weight of the speakers. When this is the case, the speakers will need additional support.

[Figure 3](#) shows a schematic diagram of the Closed-back Ceiling speaker:

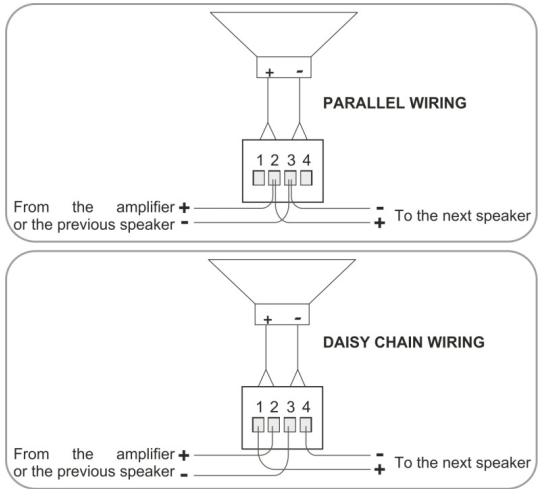


Figure 3: Closed-back Ceiling Speaker Schematic Diagram

5 Installing the Closed-back Ceiling Speakers

This section explains how to install the **SPK-C411** / **SPK-C412** closed-back ceiling speakers, that is:

- Choosing the best place to locate your speakers (see [Section 5.1](#))
- Cutting the ceiling tile (see [Section 5.2](#))
- Mounting the Speakers (see [Section 5.3](#))
- Painting the speakers (see [Section 5.4](#))

5.1 Choosing the Best Location

Ideally, locate the speakers above the main listening area. Before doing so, be sure that:

- The desired location is free of obstructions, such as electrical piping, AC ducts or water lines, and so on
- There is enough space behind the mounting surface for the speakers
- The rear side of the speaker is not blocked by wall studs or other objects

5.2 Cutting the Ceiling Tile

To cut the ceiling tile, do the following:

1. Remove the circle in the supplied template.
Keep this template for later use as a mask, as you may want to paint the speakers (see [Section 5.4](#))
2. Mark the opening in the correct location by tracing the hole in the template.
3. Cut out the hole according to the template or with a circular cutter set to the appropriate cutout size.
Initially, you can cut a smaller area inside the marked hole just to be sure that the space above the speakers is clear
4. Route the wiring from the amplifier to the speakers' cutout holes, taking care not to place them next to electrical wires or at least at a distance of about two feet from an AC line.



Do not nail or staple the speaker wires.

If you are mounting the speakers onto a ceiling tile, remove the ceiling tiles where you plan to install the speakers. Use the template to trace and then cutout the speaker hole over an empty box.

The closed-back ceiling speakers are supported by the ceiling mounting kit (two C-rings and two pairs of tile rails; the tile rails prevent the speakers from falling if the tile itself comes out or falls apart, as their ends catch onto the T-grid). When mounting onto the ceiling tiles, use both supports.



Be sure that the tiles can support the speaker. Smaller sized tiles or fiberglass-type tiles cannot support the weight of the speakers. When this is the case, the speakers will need additional support.

When mounting onto a sheetrock ceiling, the C-ring alone is used to reinforce the ceiling material.

5.3 Mounting the SPK-C411 / SPK-C412 Speakers

To mount the closed-back ceiling speakers, do the following:

1. Place the C-ring over the hole cut in the ceiling tile (on the “ceiling” side). Place it around the hole so that the tabs are located in parallel to the tile edges.

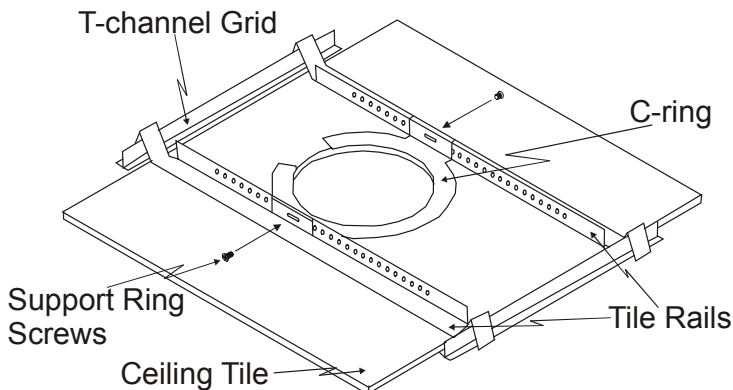


Figure 4: Mounting the SPK-C411 / SPK-C412 Closed-back Ceiling Speakers

2. Place the tile rails on the tile and snap them into the two tabs on the C-ring. Align the rails so that the ends extend over the T-channel grid.
3. Insert a screw through each tab on the C-ring to secure the rails.
4. Connect the speaker wires to the appropriate connector terminals:
 - PIN 1 and PIN 2 are connected internally and are positive (+)
 - PIN 3 and PIN 4 are connected internally and are negative (-)

Screw the hold-down screws on the connector until tight, using a small screwdriver.

You can connect the speakers in the two following possible layouts:

- **Wiring in parallel:** connect the wire pair of the subsequent speaker to PIN 2 and PIN 3. When one input connector is removed, subsequent speakers will remain connected (see [Figure 3](#))
 - **Daisy-chaining:** connect the wire pair of the subsequent speaker to PIN 1 and PIN 4. When one input connector is removed, subsequent speakers will be disconnected (see [Figure 3](#))
5. Plug the connector into the socket in the terminal cup of the speaker (see [Figure 5](#)).
 6. Run the wires through the wires' opening in the input terminal cover plug and then into the terminal block connector of the speaker.

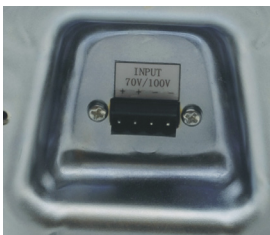


Figure 5: Plugging and Securing the Cable

7. Push the speaker into the ceiling hole until the front baffle rim is leveled with the ceiling.

8. Tighten the mounting tabs by turning the screw counter clockwise (see [Figure 6](#)).

The first quarter turn, rotates the tab outwards, and the following turns tighten the tabs to the rear side of the ceiling surface

When tightening the mounting tabs, the tabs automatically turn outward, thus clamping the speaker to the wall from its rear side.

Note: Do not over-tighten the screws. It may cause damage to both the speakers and the surface.

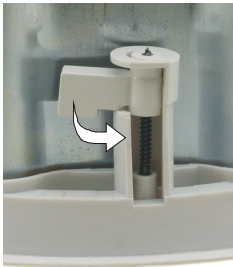


Figure 6: Tighten the Mounting Tabs

9. If required, you can further secure the speaker by connecting the speaker support ring to an independent secure anchor point.
10. Adjust each speaker to the appropriate tap setting before installing the grille (see [Figure 7](#)).

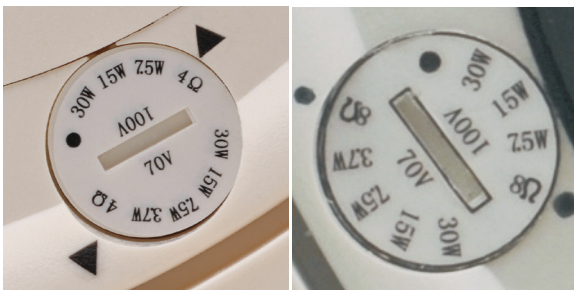


Figure 7: Adjust Tap Selector (for SPK-C411 and SPK-C412, Respectively)

11. Install the grilles to the speakers:

- Push the grille fastener into the hole in front of the baffle
- Press the grille into place until the front of the grille is flush with the rim of the baffle
- Check that the grille is securely seated



To remove the grille, insert two bent paper clips into the holes in the grille and carefully pull it down. Repeat this around the perimeter of the grille until it is completely removed.

5.4 Painting the Speaker

You can paint the speakers before or after they are installed.

When painting before installation:

- Clean the rim and grille with mineral spirits or other light solvent that is unlikely to damage the surface
- Spray with color by holding the spray can at an angle of 45°



When spraying the grille, take care not to clog the holes in the grille as this will greatly reduce the sound quality of the speakers.

When painting after installation:

- Use the circle that you cut out of the template as a paint mask
- After you finish painting, remove the paint mask

6 Technical Specifications

SPK-C411	
Audio and Power	
DESCRIPTION:	2-way ceiling speakers with metal back can
HIGH FREQUENCY DRIVER:	1/2" MYLAR dome tweeter
LOW FREQUENCY DRIVER:	4" Polypropylene cone with rubber edge woofer
IMPEDANCE:	4Ω
DISPERSION COVERAGE:	75° - 100° @(2000Hz)
CROSSOVER FREQUENCY:	6000Hz
NOMINAL SENSITIVITY:	84dB SPL @1m, 1W
DIRECTIVITY FACTOR (Q):	5.7 (averaged 100Hz-10kHz); 6.8 (2kHz)
DIRECTIVITY INDEX (DI):	6.5dB (averaged 100Hz-10kHz); 4.8dB (2kHz)
FREQUENCY RESPONSE:	75Hz to 20kHz
INPUT POWER:	30W RMS; max. 40W, continuous load (24hr) 30W
TRANSFORMER:	70V – 3.7W/7.5W/15W/30W 100V – 7.5W/15W/30W
RECOMMENDED AMPLIFIER POWER:	20W
INPUT CONNECTOR:	Terminal block
Shipping and Installation	
WEIGHT PER SINGLE SPEAKER:	2.75kg (6.06lbs) approx.
SHIPPING WEIGHT (FOR PAIR):	7.9kg (17.42lbs) approx.
DIMENSIONS (OD):	25.1cm (9.88")
CUT OUT SIZE (MOUNT DIMENSION):	22.3cm (8.78")
MOUNT DEPTH:	11cm (4.33")
ACCESSORIES:	Ceiling mounting kit
Specifications are within a 10% tolerance and are subject to change without notice at http://www.kramerelectronics.com	

SPK-C412	
Audio and Power	
DESCRIPTION:	2-way ceiling speakers with metal back can
HIGH FREQUENCY DRIVER:	1/2" MYLAR dome tweeter
LOW FREQUENCY DRIVER:	4" Polypropylene cone with rubber edge woofer
IMPEDANCE:	8Ω
DISPERSION COVERAGE:	75° - 100° @(2000Hz)
CROSSOVER FREQUENCY:	6000Hz
NOMINAL SENSITIVITY:	84dB SPL @1m, 1W
DIRECTIVITY FACTOR (Q):	5.7 (averaged 100Hz-10kHz); 6.8 (2kHz)
DIRECTIVITY INDEX (DI):	6.5dB (averaged 100Hz-10kHz); 4.8dB (2kHz)
FREQUENCY RESPONSE:	75Hz to 20kHz
INPUT POWER:	30W RMS; max. 40W, continuous load (24hr) 30W
TRANSFORMER:	70V – 3.7W/7.5W/15W/30W 100V – 7.5W/15W/30W
RECOMMENDED AMPLIFIER POWER:	20W
INPUT CONNECTOR:	Terminal block
Shipping and Installation	
WEIGHT PER SINGLE SPEAKER:	2.75kg (6.06lbs) approx.
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Specifications are within a 10% tolerance and are subject to change without notice at http://www.kramerelectronics.com	

LIMITED WARRANTY

The warranty obligations of Kramer Electronics for this product are limited to the terms set forth below:

What is Covered

This limited warranty covers defects in materials and workmanship in this product.

What is Not Covered

This limited warranty does not cover any damage, deterioration or malfunction resulting from any alteration, modification, improper or unreasonable use or maintenance, misuse, abuse, accident, neglect, exposure to excess moisture, fire, improper packing and shipping (such claims must be presented to the carrier), lightning, power surges, or other acts of nature. This limited warranty does not cover any damage, deterioration or malfunction resulting from the installation or removal of this product from any installation, any unauthorized tampering with this product, any repairs attempted by anyone unauthorized by Kramer Electronics to make such repairs, or any other cause which does not relate directly to a defect in materials and/or workmanship of this product. This limited warranty does not cover cartons, equipment enclosures, cables or accessories used in conjunction with this product.

Without limiting any other exclusion herein, Kramer Electronics does not warrant that the product covered hereby, including, without limitation, the technology and/or integrated circuit(s) included in the product, will not become obsolete or that such items are or will remain compatible with any other product or technology with which the product may be used.

How Long Does this Coverage Last

One year as of this printing; please check our Web site for the most current and accurate warranty information.

Who is Covered

Only the original purchaser of this product is covered under this limited warranty. This limited warranty is not transferable to subsequent purchasers or owners of this product.

What Kramer Electronics will do

Kramer Electronics will, at its sole option, provide one of the following three remedies to whatever extent it shall deem necessary to satisfy a proper claim under this limited warranty:

1. Elect to repair or facilitate the repair of any defective parts within a reasonable period of time, free of any charge for the necessary parts and labor to complete the repair and restore this product to its proper operating condition. Kramer Electronics will also pay the shipping costs necessary to return this product once the repair is complete.
2. Replace this product with a direct replacement or with a similar product deemed by Kramer Electronics to perform substantially the same function as the original product.
3. Issue a refund of the original purchase price less depreciation to be determined based on the age of the product at the time remedy is sought under this limited warranty.

What Kramer Electronics will not do Under This Limited Warranty

If this product is returned to Kramer Electronics or the authorized dealer from which it was purchased or any other party authorized to repair Kramer Electronics products, this product must be insured during shipment, with the insurance and shipping charges prepaid by you. If this product is returned uninsured, you assume all risks of loss or damage during shipment. Kramer Electronics will not be responsible for any costs related to the removal or re-installation of this product from or into any installation. Kramer Electronics will not be responsible for any costs related to any setting up this product, any adjustment of user controls or any programming required for a specific installation of this product.

How to Obtain a Remedy under this Limited Warranty

To obtain a remedy under this limited warranty, you must contact either the authorized Kramer Electronics reseller from whom you purchased this product or the Kramer Electronics office nearest you. For a list of authorized Kramer Electronics resellers and/or Kramer Electronics authorized service providers, please visit our web site at www.kramerelectronics.com or contact the Kramer Electronics office nearest you.

In order to pursue any remedy under this limited warranty, you must possess an original, dated receipt as proof of purchase from an authorized Kramer Electronics reseller. If this product is returned under this limited warranty, a return authorization number, obtained from Kramer Electronics, will be required. You may also be directed to an authorized reseller or a person authorized by Kramer Electronics to repair the product.

If it is decided that this product should be returned directly to Kramer Electronics, this product should be properly packed, preferably in the original carton, for shipping. Cartons not bearing a return authorization number will be refused.

Limitation on Liability

THE MAXIMUM LIABILITY OF KRAMER ELECTRONICS UNDER THIS LIMITED WARRANTY SHALL NOT EXCEED THE ACTUAL PURCHASE PRICE PAID FOR THE PRODUCT. TO THE MAXIMUM EXTENT PERMITTED BY LAW, KRAMER ELECTRONICS IS NOT RESPONSIBLE FOR DIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY BREACH OF WARRANTY OR CONDITION, OR UNDER ANY OTHER LEGAL THEORY. Some countries, districts or states do not allow the exclusion or limitation of relief, special, incidental, consequential or indirect damages, or the limitation of liability to specified amounts, so the above limitations or exclusions may not apply to you.

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IF ANY PRODUCT TO WHICH THIS LIMITED WARRANTY APPLIES IS A "CONSUMER PRODUCT" UNDER THE MAGNUSON-MOSS WARRANTY ACT (15 U.S.C.A. §2301, ET SEQ.) OR OTHER APPLICABLE LAW, THE FOREGOING DISCLAIMER OF IMPLIED WARRANTIES SHALL NOT APPLY TO YOU, AND ALL IMPLIED WARRANTIES ON THIS PRODUCT, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR THE PARTICULAR PURPOSE, SHALL APPLY AS PROVIDED UNDER APPLICABLE LAW.

Other Conditions

This limited warranty gives you specific legal rights, and you may have other rights which vary from country to country or state to state.

This limited warranty is void if (i) the label bearing the serial number of this product has been removed or defaced, (ii) the product is not distributed by Kramer Electronics or (iii) this product is not purchased from an authorized Kramer Electronics reseller. If you are unsure whether a reseller is an authorized Kramer Electronics reseller, please visit our Web site at www.kramerelectronics.com or contact a Kramer Electronics office from the list at the end of this document.

Your rights under this limited warranty are not diminished if you do not complete and return the product registration form or complete and submit the online product registration form. Kramer Electronics thanks you for purchasing a Kramer Electronics product. We hope it will give you years of satisfaction.

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We welcome your questions, comments, and feedback.

Web site: www.kramerelectronics.com

E-mail: info@kramerel.com



SAFETY WARNING

Disconnect the unit from the power supply before opening and servicing



P/N:

2900-300188



Rev:

1